NOT MEASUREMENT SENSITIVE

MIL-STD-367A(MR)
29 June 1990
SUPERSEDING
MIL-STD-367(MR)
10 February 1986

MILITARY STANDARD

ARMOR TEST DATA REPORTING

AMSC NO. A3719 FSC 95GP

1. This military standard is approved for use by all Departments and Agencies of the Department of Defense.

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Director, U.S. Army Material Technology Laboratory, Arsenal Street, ATTN: SLCMT-MEE, Watertown, MA, 02172-2719, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 Purpose. The purpose of this standard is to provide acceptable procedures for reporting armor test and armor welding data when such data is required from contractors supplying armor or armor products to the government.

1.2 Scope. This standard incorporates in a single document, acceptable procedures and formats for reporting quality control test data requisite to the acceptance and acquisition of armor and armor products.

1.2.1 Formats included in this document are as follows:

Format I - Check list for data on steel armor material

Format II - Check list for data on non-ferrous armor material

Format III - Format for reporting ballistic test armor welding data

Format IV - Format for reporting an armor welding procedure

2. REFERENCED DOCUMENTS

Not applicable.

3. DEFINITIONS

3.1 Armor. Defensive covering used as a protection against weapons.

3.2 Armor test data. Pertinent facts, figures, exhibits and test results developed and recorded by contractors as required in applicable standards, specifications, drawings, purchase descriptions or other contractual agreements.

3.3 Contractor. The organization supplying armor or armor assemblies to the government under contract.

4. GENERAL REQUIREMENTS

4.1 Reporting armor test data. Armor test data as required by procurement documents shall be processed according to the detailed requirements of Section 5.

4.2 Authentication. The armor test data report shall provide for the following signatures.

4.2.1 Responsible officer. The armor test data report shall be signed by a responsible officer of the contractor's organization.

4.2.2 Government representative. A Government representative may witness tests and countersign test reports. The latter signature shall constitute verification of the test data reported, but shall not necessarily indicate concurrence with any conclusion presented.

5. DETAILED REQUIREMENTS

5.1 Generation of armor test data. When procurement documents require the submission of armor test data, ballistic test armor welding data or armor welding procedures by a contractor, instructions for generating such data shall be given in the procurement documents.

5.2 Armor test data reporting formats. Acceptable formats for reporting armor test data and welding information are shown in paragraphs 5.5 through 5.8, (Formats I through IV). Armor contractual documents requiring the submission of armor test data shall refer to this standard, MIL-STD-367A(MR), and shall cite the applicable Format (or Formats) in the contract or detailed specification. When appropriate, the format figures provided in this standard may be reproduced and adapted for use. Optional formats differing from Formats I through IV may be employed by the contractor (See 5.4).

5.3 Pagination.

5.3.1 Page size. A uniform page size of 8 1/2 x 11 inches shall be used in the submission of armor test data.

5.3.2 Page identification. Each page in a report shall be identified to provide a reliable means of record control. Pages shall be numbered consecutively and listed as Page of Pages. The page number shall be placed in the lower right corner of the page.

5.4 Optional armor test data formats. If any item of data listed in formats I through IV is not applicable in a particular data submission, the notation "N/A" shall be entered in the appropriate item location.

Armor test data which cannot be adequately reported in any of the acceptable formats I through IV, shall be submitted in a format approved by the government.

5.5 Format I - check list for data on steel armor material.

5.5.1 Instructions for completion of Format I, Figure 1.

Instructions are provided below. Each statement is numbered to correspond with a number in parenthesis on Figure 1. The latter are for instruction reference only and should not appear on any reports submitted to the government.

1. To be filled in by Government Ballistic Test Agency.

2. Insert the name of the manufacturer.

3. Insert the address of the manufacturer.

4. Insert the point of contact of the manufacturer.

5. Insert the telephone number of the manufacturer's point of contact.

6. Insert the FAX number of the manufacturer's point of contact.

7. The manufacturer's record number and the date of manufacture shall be inserted in this space.

8. Insert the name of the prime contractor.

9. Insert the address of the prime contractor.

10. Insert the prime contract number.

11. TECOM project number to be inserted.

12. Insert the name of the Government Activity responsible for acceptance of the steel armor.

13. Indicate the specification number under which the sample is to be tested, indicate the revision and/or amendment number when appropriate and the class when appropriate.

14. Place an "X" in the block describing the purpose for which the test is to be conducted.

15. If sample is a retest, give the Firing Record Number of the failed sample.

16. Insert the range of chemical composition established together with the chemical analysis of the heat and/or product as applicable.

17. Insert heat number of the sample.

18. Insert the lot number of the sample.

19. Insert the type of furnace.

20. Insert the weight of the quantity of material in the lot represented by the sample.

21. Insert the method of sulfur shape control if applicable.

22. Insert homogenizing temperature and time of temperature.

23. Insert normalizing temperature and time of temperature.

24. Insert hardening temperature and time of temperature.

25. Insert draw temperature and time of temperature.

26. Record coolant used.

27. Record Charpy impact specimen size, the Charpy impact in the LT and TL direction as well as the Brinell hardness of the test specimen.

28. Insert whether or not permission was granted to submit a separate heat treated ballistic sample.

29. For plates, record plate number, ordered thickness, size, ordered width, rolled width, and required as well as actual hardness.

30. & 31. These signatures confirm that the sample conforms to the data submitted on the format as well as all requirements specified in the applicable test armor specification.

REQUEST FOR BALLISTIC TEST (STEEL) Firing Record No. ____(1)_____

MANUFACTURER	PRIME CONTRACTOR
Name: _____(2)_____	Name: _____(8)_____
Address: _____(3)_____	Address: _____(9)_____
POC: _____(4)_____	CONTRACT NO.:_____(10)_____
Phone No.: (5) FAX NO: (6)	TECOM PROJECT NO. (11)

MFG. REC # & DATE: _____(7)_____ DCAS REGION: _____(12)_____

SPECIFICATION
MIL-A- ___(13)____ Rev. _____ Amend. _____ Class _____

Purpose: (14) Acceptance [] First Article [] Retest []
If retest, Firing Record No. of failed sample: ____(15)_____

CHEMICAL COMPOSITION (16) Heat No. ___(17)_____ Lot No. ___(18)_____

	Range	Heat	Prod		Range	Heat	Prod		Range	Heat	Prod
C				Cr				Zr			
Mn				Mo				Al			
P				V				Pb			
S*				B				Sn			
Si				Cu				Sb			
Ni				Ti				As			

OTHER:

Type furnace: ___(19)____ Represents _(20)_ lbs.
* Sulfide shape control method ___(21)_____

HEAT TREATMENT			
	Temp.	Duration	Coolant (26)
Homogenize (22)			
Normalize (23)			
Harden (24)			
Draw (25)			

CHARPY IMPACT AT -40 Deg. F.
Specimen Size: ___(27)_____

	LT	TL	BHN on Specimen
1			
2			
3			

Seperately heat treated ballistic sample: (28) Yes: _____ No: _____

(29) Plate No.	Ordered Thickness	Size	Ordered Width	Rolled Width	Hardness Required	Hardness Actual

The material this sample represents conforms to all the requirements for the above name specification.

(30) Signature of Gov't Rep. Date

(31) Signature of Supplier Rep. Date

FIGURE 1 FORMAT I. Checklist for data on steel armor material.

5.6 Format II - Check list for data on non-ferrous armor material.

5.6.1 Instructions for completion of Format II, figure 2 are given below:

The instructions are numbered to correspond to a number in parenthesis in figure 2. The numbers in parenthesis are for instruction reference only, and should not appear on any reports submitted.

1. To be filled in by Government Ballistic Test Agency.

2. Insert the name of the manufacturer.

3. Insert the address of the manufacturer.

4. Insert the manufacturer's point of contacts name.

5. Insert point of contact's telephone number.

6. Insert point of contacts FAX number.

7. The manufacturer's record number and the date of manufacture shall be inserted in this space.

8. Insert the name of the prime contractor.

9. Insert the address of the prime contractor.

10. Insert the prime contract number.

11. TECOM project number to be inserted.

12. Insert the name of the Government Activity responsible for acceptance of the armor.

13. Insert specification number and revision or amendment under which the sample is to be tested.

14. Place an "X" in the block describing the purpose for which the test is to be conducted.

15. If sample is a retest, insert the Firing Record Number of the failed sample.

16. Insert lot number, plate number, ordered thickness, and alloy and temper of sample.

17. Insert the chemical analysis of the sample.

18. Insert the ultimate tensile strength, yield strength and elongation of the sample.

19. Insert results of stress corrosion test of sample when required.

20. Indicate level of reduced testing in effect, 'Reduced' or 'Audit' testing. List additional lots represented by sample, up to two (2) additional lots for reduced testing and up to nine (9) additional lots for audit testing.

21. and 22. Self explanatory.

REQUEST FOR BALLISTIC TEST (NON-FERROUS) Firing Record No. __(1)_____

MANUFACTURER	PRIME CONTRACTOR
Name: _____(2)_____	Name: _____(8)_____
Address: _____(3)_____	Address: _____(9)_____
POC: _____(4)_____	CONTRACT NO.:_____(10)_____
Phone No.: (5) FAX NO: (6)	TECOM PROJECT NO. (11)

MFG. REC # & DATE: _____(7)_____ DCAS REGION: _____(12)_____

SPECIFICATION
MIL-A- ___(13)____ Rev. _____ Amend. _____ Class _____

Purpose: (14) Acceptance [] First Article [] Retest []
If retest, Firing Record No. of failed sample: ____(15)_____

TEST ITEM IDENTIFICATION (16)

Lot No.	Plate No.	Ordered Thickness	Alloy and Temper

CHEMICAL ANALYSIS OF SUBMITTED FIRST ARTICLE (17)

Zn	Mg	Mn	Cu	Fe	Si	Cr	Ti	Other	Remainder - Al

MECHANICAL PROPERTIES (18)

UTS - PSI	YS (0.2% offset) PSI	ELONG. 2"

Stress Corrosion Test: (19)

Lots Represented by (20) [] Reduced Testing [] Audit Testing

The material this sample represents conforms to all the requirements for the above name specification.

(21) Signature of Gov't Rep. Date (22) Signature of Supplier Rep. Date

FIGURE 2 FORMAT II. Checklist for data on non-ferrous armor material.

5.7 Format III. Format for reporting ballistic test armor welding data.

5.7.1 Instructions for completion of Format III (Figures 3A, 3B, and 3C) are given in 5.7.2, 5.7.3 and 5.7.4.

5.7.2 Instructions for completion of Format III Figure 3A.

The instructions are numbered to correspond with the circled numbers on the sample form. The circled numbers are for instruction reference only, and should not appear on any reports submitted.

The following instructions illustrates how to fill out weld armor data sheet 1 (see figure 3A).

1. Leave blank. To be filled in by the Government test agency.

2. Leave blank. To be filled in by the Government test agency.

3. Insert serial number of plate, as assigned by the fabricator. Each plate shall be numbered in such a manner as to provide ready identification.

4. Insert the number of the specification under which the material is to be tested.

5. Enter the date on which the plate was welded.

6. Insert type of armor, e.g., "aluminum".

7. Insert thickness of plate.

8. Insert the name of the fabricator doing the welding. If welded by a subcontractor, information as to the primary contractor must be given in a letter of transmittal.

9. Insert the complete address of the fabricator.

10. Insert the number of the contract, if any, in accordance with which the sample or weldment is submitted.

11. Insert model and name of vehicle to which welding applies.

12. Insert the name, clock number, or symbol by which the welder of the sample or weldment can be identified, and the name of the fabricator.

13. Insert "For Capability Testing".

14. Prepare a sketch of the weld. It is imperative that the following characteristics be shown in the sketch whenever they are present in the plate:

    (a) Thickness of plate.
    (b) Included angle.
    (c) Root gap.

(d) Spacer strip or backup bar.
(e) Exact sequence and number of pass deposits.
(f) Root face dimension.

15. Block out words not applicable.

16. Block out words not applicable.

17. Block out words not applicable.

18. Block out words not applicable.

19. Insert preheat temperature in degrees "F". The preheat temperature of plate welded at room temperature is the room temperature.

20. Enter post heat temperature, if any. If none, insert the work "None".

21. Insert "Yes" or "No".

22. Insert "Yes" or "No".

23. Insert the size of the electrode used in the pass indicated in the left hand column.

24. Indicate the type of pass used. For beading, insert "B", for weaving, "W". This column need not be completed for automatic welding.

25. Indicate amperage used on each pass.

26. Indicate voltage used on each pass.

27. Indicate length of crack, if any, for each bead (visual examinaton with no greater than 10 power reading glass).

28. State wether chipping or grinding carried out.

29. For automatic welding, insert speed in inches per minute. For hand welding, no entry need be made.

30. Insert interpass temperature. This is determined by measuring the temperature of the base metal immediately before depositing each bead, at a point lying approximately at the intersection of a line three (3) inches from and parallel to the center line of the joint, and a line perpendicular to and through the midpoint of the length of the joint. Readings must be taken for all welds and will be listed for the right leg, left leg, and cross bar, respectively, in the columns headed, "A-B", "C-D", and "E-F-G".

31. See item 30 above.

32. See item 30 above.

ARMOR WELDING DATA SHEET #1

REPORT NO. (1)
SHEET NO. (2) OF

PLATE NO.: (3)
SPECIFICATION: (4)
DATE: (5)
TYPE: (6)
THICKNESS: (7)
ORDANCE MATERIAL CONCERNED: (11)

CONTRACT NO. (10)

WELDED ARMOR DATA SUBMITTED BY: (8)
ADDRESS: (9)
WELDED BY: (12)

OBJECT: (13)

On a dimension sketch of the Weld Joint and Weldment, indicate: 1) the included angle; 2) the root opening; 3) the root face; 4) the bead sequence; 5) additional sketch of spacer strip on back-up, if any; 6) width of marking, if any, on edges of plate; 7) Fit-up gap, horizontal and verticle, as applicable; 8) Record hardness (average of three readings) of plate taken 3/4 inch from the edge of the weld to determine if excessive heat input was used in the fabrication of the ballistic sample.

(14)

Weld reinforcement (has) (has not) been removed.

WELDING DATA

PLATE PREPARATION	POSITION OF WELDING	WELDING	POLARITY
Flame cutting	Flat		Str
Flame softening	Horizontal	Automatic	Rev
Grinding	Verticle up	Hand	AC
Machining	Verticle down		DC
(15)	Machining (16)	(17)	(18)

PREHEAT (19) POSTHEAT (20)

PEENING (21) BUTTERING (22)

PASS	ELEC SIZE	TYPE PASS	AMPS	VOLTS	CRACKING	CHIP OR GRIND	SPEED IN/MIN	INTERPASS TEMP. (F) A-B	C-D	E-F-G
1	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										

B - BEADING PASS W - WEAVING PASS

NOTE: Fillet welds shall be verified with fillet weld gages. Fillet welds may exceed by not more than 1/16 inch the designed fillet size specified for ballistic testing.

FIGURE 3A FORMAT III Armor welding data sheet No. 1.

5.7.3 The following instructions illustrate how to fill out weld armor data sheet 3 (see figure 3B).

1. Leave blank. To be filled in by the Government test agency.

2. Leave blank. To be filled in by the Government test agency.

3. Insert the serial number of the plate. Each plate shall be numbered in a manner that will provide ready identification.

4. Insert the name of the manufacturer of the armor.

5. Insert type of armor, e.g., "aluminum armor plate".

6. Insert thickness of plate.

7. Insert the heat number of designation assigned by the manufacturer.

8. Insert the lot number or designation assigned by the manufacturer.

9. Block out words not applicable.

10. Insert the chemical composition of the armor, as furnished by the manufacturer. Note: Change headings as required.

11. Insert the Brinell hardness number for the face and for the back of the plate.

12. Enter the name of the heat treating company and subcontractor, if any and list each step of the heat treating process in sequence.

13. Enter electrode or filler metal data. Space is provided for four entries. If electrodes of more than four (4) sizes, or more than four manufacturers are used, additional sheets must be submitted. complete as follows:

    (a) In the first column, enter the size of the electrode used.
    (b) In the second column, enter the name of the manufacturer of the electrode of the size shown under (a) above. If electrodes of identical size from more than one manufacturer are used, more than one entry must be made.
    (c) In the third column, enter the trade name of the electrode, as designated by the manufacturer.
    (d) In the fourth column, enter the type of electrode, when applicable.
    (e) In the fifth column, enter the class of electrode, when applicable.

14. Enter chemical analysis of electrode or filler metal. Change headings as required. If electrodes of more than four (4) sizes, or more than four manufacturers are used, additional sheets must be submitted. Complete as follows:

    (a) In the first column, enter the name of the manufacturer, the trade name of the electrode, and the size of the electrode.
    (b) In the space provided, enter the chemical analysis of the core wire, as submitted by the manufacturer of the core wire.
    (c) Enter the chemical analysis of the weld metal, either as submitted by the manufacturer or as determined by the fabricator.
    (d) In the last column, enter the type of coating on the electrode, if any.

15. This space is provided for fabricators who used any automatic process in welding. Complete as follows:

    (a) In the first column, enter the name of the manufacturer of the wire used in the automatic process.
    (b) In the second column, enter the trade name of the wire, as designated by the manufacturer. If the trade name includes a number, this also must be given.
    (c) Enter the size of the electrode in the third column.
    (d) In the fourth column, enter the trade name, including number of the flux if used.
    (e) Enter the results of chemical analyses of both the core wire and the weld deposit in the preceding page.

16. Enter the name of the company doing the radiographic inspection of the welds.

17. Enter the serial number assigned by the radiographer.

18. Enter in this space any remarks that may be needed to clarify any of the various entries.

19. This space is provided for the signature of the representative of the fabricating company.

20. Signature of the Government inspector.

ARMOR WELDING DATA SHEET #2	REPORT NO. (1)
	SHEET NO. (2) OF

ARMOR PLATE DATA

PLATE NO. (3)

	PLATE "A"	PLATE "B"
MANUFACTURER (4)		
TYPE (5)		
THICKNESS (6)		
HEAT (7)		
LOT (8)		
PROCESS (9)	O.H. ELEC. ACID BASIC	O.H. ELEC ACID BASIC

(10) CHEMICAL COMPOSITION (11) BHN

	C	Mn	Si	P	S	Cr	Ni	Mo	Zr	V	FACE	BACK
PLATE "A"												
PLATE "B"												

(12) HEAT TREATING DATA

HEAT TREATED BY

(13) ELECTRODE OR FILLER METAL DATA

Table 1

SIZE	MANUFACTURER	TRADE NAME	TYPE	CLASS

TABLE 2 (14)

MANUFACTURER TRADE NAME AND SIZE	CHEMICAL ANALYSIS	C	Mn	Si	S	P	Cr	Ni	Mo	COATING
	CORE WIRE									
	WELD METAL									
	CORE WIRE									
	WELD METAL									
	CORE WIRE									
	WELD METAL									
	CORE WIRE									
	WELD METAL									

TABLE 3 (AUTOMATIC WELDING) (15)

MANUFACTURER	TRADE NAME	SIZE	FLUX

RADIOGRAPHED BY (16)

RADIOGRAPH SERIAL NO. (17)

REMARKS The procedure used in fabricating the crossbar weld (is) (is not) the same as the procedure used in fabricating the leg welds.

(18)

FABRICATOR REPRESENTATIVE (19)	RESIDENCE INSPECTOR OF ORDNANCE (20)

FIGURE 3B FORMAT III. Armor welding data sheet No. 2.

5.7.4 The following instructions illustrate how to fill out the weld armor data sheet 3 (see figure 3C).

1. Leave this space blank. To be filled in by Government testing agency.
2. Leave blank.
3. Enter the name of the company submitting the plate.
4. Enter the plate number.
5. Enter applicable specification number.
6. Enter the name of the company or agency radiographing the plate.
7. Enter the date on which the plate was radiographed.
8. Enter the actual thickness of the plate (not including weld reinforcement).
9. Enter the actual kilovoltage used during the exposure.
10. Enter milliamperge readings of the machine.
11. Enter exposure time expressed in seconds.
12. Enter the focal distance (the distance in feet and inches from the target of the X-ray machine to the film).
13. Enter the exact commercial brand and type of film used.
14. Identify screens or filters used (whether fluorescent or lead type intensifying screens or filters).
15. Enter angle of radiation.
16. Enter radiographic acceptance standard used.
17. Results - Identify the type and severity of discontinuities and provide radiographs with reader sheets showing location markers used.

ARMOR WELDING DATA SHEET #3	REPORT NO. _(1)_____ SHEET NO. _____ OF _____
X-RAY SERIAL NO.__(2)_____	

WELD RADIOGRAPHIC REPORT

PLATES SUBMITTED BY (3)	PLATE NO. (4)	SPECIFICATION (5)
RADIOGRAPHED BY (6)		DATE (7)

PLATE THICKNESS (8)	KV (9)	MA (10)	TIME (11)	FOCAL DIST. (12)
TYPE OF FILM (13)			SCREENS OR FILTERS (14)	

SHOCK TEST PLATE

Showing Locations of Radiographs and Results of Tests

ANGLE OF RADIATION _____(15)_____

RADIOGRAPHIC ACCEPTANCE STANDARD _____(16)_____

RESULTS

(17)

NEGATIVES READ BY: (18)

FIGURE 3C FORMAT III. Armor welding data sheet No. 3.

5.8 Format IV. Format for reporting an armor welding procedure.

5.8.1 Illustration data used in Format IV - Figures 4A through 4G. The illustration data used in the preparation of Format IV, figures 4A through 4G are examples intended to serve for demonstration purposes only. Contractor's armor test data reports shall contain actual data generated in the manufacture and testing of the armor products they are supplying to the government. In figure 4A the signatures of responsible officers of both the contractor and the manufacturer organizations are required when the latter is not the contractor. In figure 4C it is to be noted that engineering drawings other than perspective may be utilized when such drawings would be more appropriate. The following figures illustrate Format IV armor test data reporting:

RECORDED JOINT WELDING PROCEDURE

FOR

MEDIUM TANK M1 (VEHICLE)

WELDED HULL (WELDMENT)

Book 10

DATE OF SUBMITTAL - 28 NOV 78

MANUFACTURED BY

Tank Manufacturing Company

LOCATED AT

Lincoln, Pennsylvania

FOR CONTRACTOR

ABC Corporation

LOCATED AT

El Paso, California

Contract No.

Manufactured Under

Approved by Contractor
Date

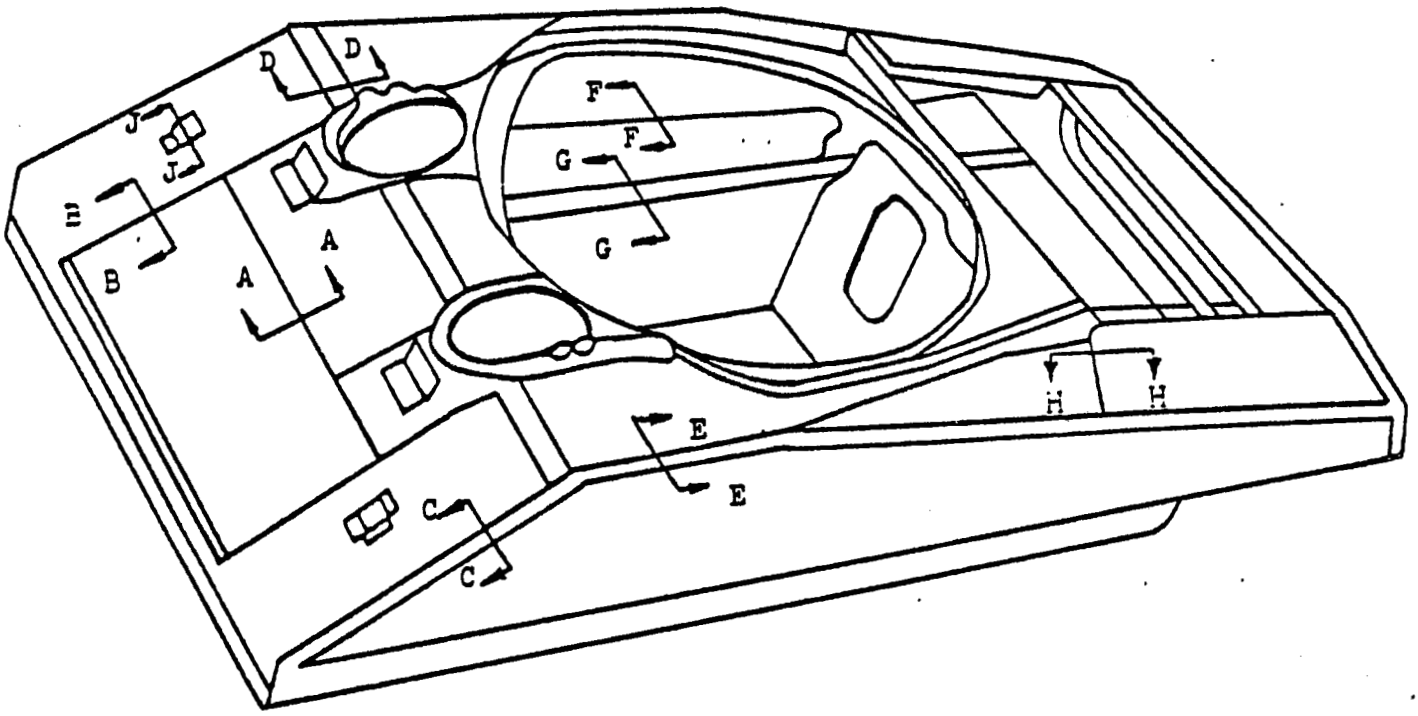
Approved by Manufacturer
Date

FIGURE 4A. Format IV. Example of cover page for recorded armor joint welding procedure.

Recorded Joint Welding Procedure
for
A Welded Hull

Contents:

FIGURE 4B. FORMAt IV. Example of table of contents.



NOTES:

a. Joint details are shown in recorded joint welding procedures.

b. The joint designs shown in the recorded joint welding procedures are for illustration purposes only, and it is not necessarily indicated that applications of these joints in similar locations will be approved for any specific vehicle.

FIGURE 4C Format IV. Example of persepective drawing showing location of weld joints in recorded joint welding procedure.

Summary of Certification Tests for Recorded Joint Welding Procedure

Joint No.	Joint Type	Recorded Joint Welding Procedure No.	Armor** Reference Designation	Status of Procedure Certification / Ballistic Tests Flat	Verticle	Horizontal	Workmanship Specimens Flat	Verticle	Horizontal
A-A		1	I	Passed Specimen #17&18)	Not Tested	Not Tested	Passed (Specimen #50)	Not Required	Not Required
B-B		2	I and	Passed Specimen #17&18)	"	"	"	"	"
			II	Passed Specimen #19)	"	"	"	"	"
C-C		3	I and	Passed Specimen #17&18)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
			II	Passed Specimen #22)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
D-D		4	I and	Passed Specimen #16)	"	"	Not Required	Not Required	Not Required
			II	Passed Specimen #20&21)	"	"	Not Required	Not Required	Not Required
E-E		5	II	Passed Specimen #22)	"	"	Passed (Specimen #51)	Not Tested	Not Tested
F-F		6	II	Passed Specimen #20&21)	" "	" "	Passed (Specimen #52)	" "	" "
G-G		7	II	Passed Specimen #20&21)	" "	" "	Passed (Specimen #52)	" "	" "
H-H		8	II	Not Required	Not Required	Not Required	Passed (Specimen #53)	Passed (Specimen #54)	Passed (Specimen #55)
J-J		9	I and II	" "	" "	" "	" "	" "	" "

**Summary of armor and filler data

FIGURE 5D Format V. Summary of certifications tests for various joints required by the armor welding procedure.

FOR ILLLUSTRATION ONLY

TABLE A. Electrodes conforming with specification MIL-E-XXXX.

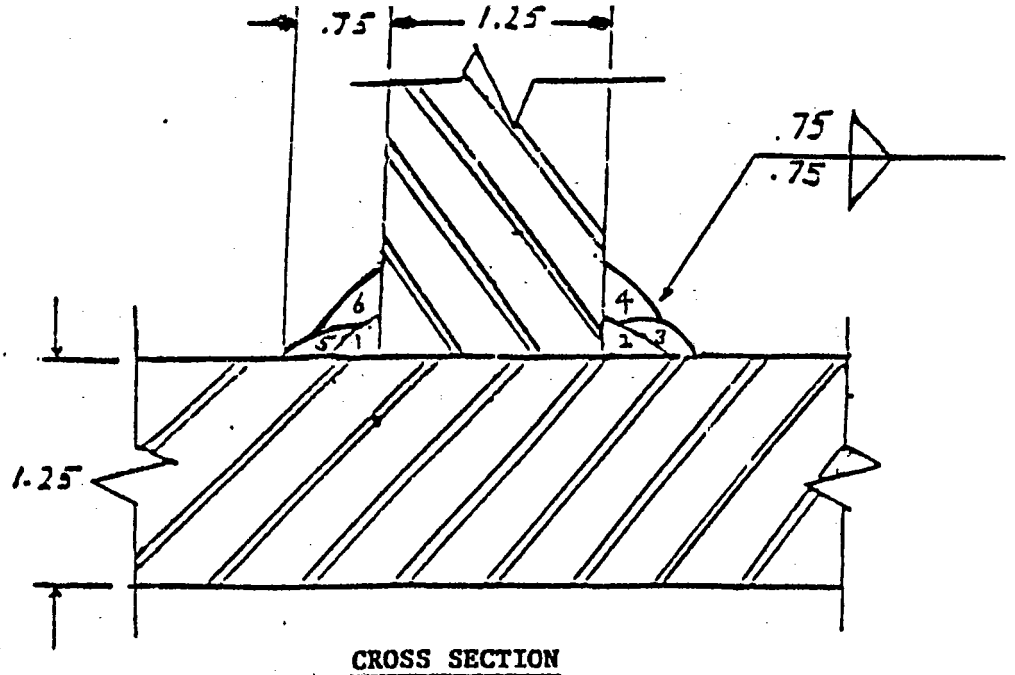
Electrode Reference Designation	Manu-facturer	Brand Name	Type	Class
A	"X"	Bestweld	V	MIL-307L-15
B	"X"	Superweld	VI	MIL-308MOL-15
C	"Y"	Bestalloy	VI	MIL-308MOL-15
D	"Y"	Superloy	VI	MIL-308MOL-15
E	"Z"	Bestarc	V	MIL-307L-15
F	"Z"	Superarc	VI	MIL-308MOT-16

TABLE B. Electrodes not conforming with specification MIL-E-XXXX

Electrode Reference	Manu-facturer	Brand Name	Type of Covering		Chemical composition range (%)									
					C	Mn	Si	S	P	Cr	Ni	Mo	V	Others
G	"Q"	Excelweld	Lime	Core wire	.15 Max.	3.50 4.50	.25 .60	.03 Max.	.04 Max.	19.5 21.5	9.0 10.5			
				Deposited Weld Metal	.17 Max.	5.00	.80			18.0 20.5		.50 1.00		
H	"R"	Wonderweld	Titania	Core wire	.15 Max.	1.50 2.00	.25 .60	.03 Max.	.04 Max.	19.5 21.5	9.0 10.5			
				Deposited Weld Metal	.17 Max.	1.25 2.00	.80 Max.			18.0 20.5		1.80 2.25		

FIGURE 4E Format IV. Summary of filler metal.

Base Metal	AA 5083 to AA5083 (MIL-A-46027)
Base Metal Thickness	1.25" to 1.25"
Welding Progress/Manual or Machine	GMAW/Manual
Filler Metal Type and Size	5356 (ALCOA) 0.045"
Contact Tip to Work Distance	0.75"
GTAW Electrode Type and Size	N/A
Position	Horizontal
Shielding Gas Type	75% Ar/25% He
Gas Flow/Nozzle Size	50-60 CFH/10
Weld Passes/Amperage/Voltage/Travel Speed	1-6/265-285A/25-28V/13-15 IPM
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Current Polarity	DCRP
Joint Preparation Type/Method	Square Edge/Machined & Degreased
Back Gouging	N/A
Backing Type	N/A
Preheat/Interpass/Post Heat Temperature	60-70°F/200°F Max/N/A
In-Process Cleaning	Stainless Steel Wire Brush Between Each Pass



CROSS SECTION

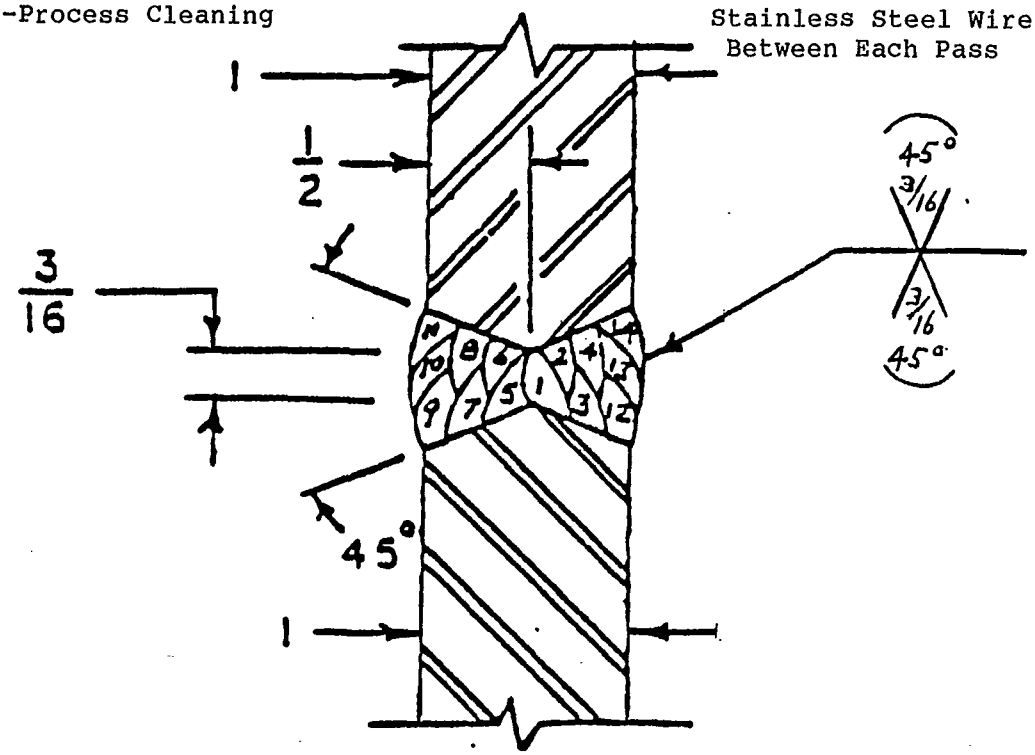
WELDING PROCEDURE	JOINT DETAIL FOR SECTION A-A
COMPANY NAME	DRAWING NO. 257 A-R

PREPARED BY: JOHN SMITH (SIGNATURE), TITLE, DATE

ACCEPTED BY: JOHN DOE (SIGNATURE), GOVT. REPL, DATE

FIGURE 4F FORMAT IV. Example of a sketch for a joint A-A in joint welding procedure.

Base Metal	AA 5083 to AA5083 (MIL-A-46027)
Base Metal Thickness	1.0" to 1.0"
Welding Progress/Manual or Machine	GMAW/Manual
Filler Metal Type and Size	5356 (ALCOA) 0.045"
Contact Tip to Work Distance	0.75"
GTAW Electrode Type and Size	N/A
Position	Horizontal
Shielding Gas Type	75% Ar/25% He
Gas Flow/Nozzle Size	50-60 CFH/10
Weld Passes/Amperage/Voltage/Travel Speed	1-6/265-285A/25-28V/13-15 IPM
Weld Passes/Amperage/Voltage/Travel Speed	7-14/285-300A/28-30V/13-15 IPM
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Passes/Amperage/Voltage/Travel Speed	N/A
Weld Current Polarity	DCRP
Joint Preparation Type/Method	Double Vee/Machined & Degreased
Back Gouging	N/A
Backing Type	N/A
Preheat/Interpass/Post Heat Temperature	60-70°F/200°F Max/N/A
In-Process Cleaning	Stainless Steel Wire Brush Between Each Pass



CROSS SECTION

WELDING PROCEDURE	JOINT DETAIL FOR SECTION H-H
COMPANY NAME	DRAWING NO. 258 A-R

PREPARED BY: JOHN SMITH (SIGNATURE), TITLE, DATE

ACCEPTED BY: JOHN DOE (SIGNATURE), GOVT. REPL, DATE

FIGURE 4G FORMAT IV. Example of a sketch for a joint H-H in joint welding procedure.

Custodian:
Army - MR

Review activities:
Army - AR, AT, TE
DLA - IS

Preparing Activity:
Army - MR

Project 95GP-A023

(WP# ID 7276A/DISC 0114A. FOR MTL USE ONLY.)